

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference B13181.3 PR	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR99/03301	International filing date (day/month/year) 28 December 1999 (28.12.99)	Priority date (day/month/year) 30 December 1998 (30.12.98)
International Patent Classification (IPC) or national classification and IPC G01J 5/20		
Applicant COMMISSARIAT A L'ENERGIE ATOMIQUE		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>	
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input checked="" type="checkbox"/> Certain observations on the international application</p>	

Date of submission of the demand 01 July 2000 (01.07.00)	Date of completion of this report 04 October 2000 (04.10.2000)
Name and mailing address of the IPEA/EP	Authorized officer
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR99/03301

I. Basis of the report

1. This report has been drawn on the basis of (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

- ☐ the international application as originally filed.
- ☒ the description, pages 1-14, as originally filed,
 pages _____, filed with the demand,
 pages _____, filed with the letter of _____,
 pages _____, filed with the letter of _____.
- ☒ the claims, Nos. 1-11, as originally filed,
 Nos. _____, as amended under Article 19,
 Nos. _____, filed with the demand,
 Nos. _____, filed with the letter of _____,
 Nos. _____, filed with the letter of _____.
- ☒ the drawings, sheets/fig 1/7-7/7, as originally filed,
 sheets/fig _____, filed with the demand,
 sheets/fig _____, filed with the letter of _____,
 sheets/fig _____, filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-11	YES
	Claims		NO
Inventive step (IS)	Claims	1-11	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-11	YES
	Claims		NO

2. Citations and explanations

1. Reference is made to the following documents:

D1: WO-A-93/25877 (HONEYWELL INC) 23 December 1993
(1993-12-23)

D2: WO-A-97/21250 (LOCKHEED MARTIN IR IMAGING SYS)
12 June 1997 (1997-06-12)

D3: US-A-5 171 733 (HU QING) 15 December 1992 (1992-
12-15)

D4: OSTERMAN, PATT, HUNT PETERSON: 'Antenna-coupled
bolometer with a micromachined-beam thermal
link' APPLIED PHYSICS LETTERS, Vol. 71, no. 16,
20 October 1997 (1997-10-20), pages 2361-2363,
XP000725894, cited in the application.

2. Claim 1

2.1 D4, which is considered the closest prior art,
defines a bolometric detector including a receiving
antenna, a resistive load and a transmission line or
guide. The presence of the transmission line or
guide between the receiving antenna and the
resistive load has at least two disadvantages:

- the system is not compact enough;

- it is difficult to produce such structures for very high frequencies.

The subject matter of Claim 1 defines a bolometric detector characterized in that the resistive load consists of the antenna load resistor. In this assembly, the two above-cited disadvantages are no longer present.

D4 does not in any way suggest the use of a system such as that defined in Claim 1.

D2 discloses an infrared radiation detector having a smaller detection surface. In D2, there is electric coupling between the thermoelectric component and the antenna (see page 21, lines 27-29, page 22, lines 1-3, Figure 8a). In Claim 1, the thermoelectric component is electrically insulated from the antenna load resistor, whereby an excessive current leakage from the thermoelectric component towards the antenna is prevented.

D2 does not suggest the electric insulation defined in Claim 1.

D1 discloses coupling an antenna with a superconductor microbolometer.

In D1, there is electric coupling between the thermoelectric component and the antenna (see page 3, lines 16-17, Figure 2a).

D1 does not suggest the electric insulation defined in Claim 1.

D3 discloses a superconductor microbolometer coupled

with an antenna. In D3, there is electric coupling between the thermoelectric component and the antenna (see column 3, lines 9-10, Figure 2).

D3 does not suggest the electric insulation defined in Claim 1.

Therefore, according to the interpretations discussed in Box VIII, the subject matter of Claim 1 is novel and inventive over the prior art (D1-D4) (PCT Article 33(2) and (3)).

2.2 Claims 2 and 9 are dependent on Claim 1, and consequently, the subject matter thereof is also novel and inventive over the prior art.

2.3 Claim 10 defines a method for producing the detector of Claim 1. Claim 11 is dependent on Claim 10. Therefore, the respective subject matter thereof is also novel and inventive over the prior art.

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. The subject matter of Claim 1 appears to be inconsistent with the part of the description (page 7, lines 26-27, Figure 2) that clearly states that the thermoelectric component (4) is not insulated from the antenna load resistor ((2a) and (2b)), but, on the contrary, is linked to said resistor by at least two metal arms ((3a), (3b)). This leads to a lack of clarity in Claim 1.

The subject matter of Claim 1 actually appears to correspond to the part of the description (page 13, lines 13-14, and Figure 6F) wherein the passivation layer (11) efficiently insulates the thermoelectric component ((Z1), (C1), (C2)) of the antenna load resistor ((2a) and (2c)). The present report has been drafted on the basis of this observation.

2. The wording of Claim 3 lacks clarity, in so far as reference is first made to a two metal arm assembly (3a, 3b) (see page 15, last line), then to a second metal arm (3c) (see page 16, second line). The present report has been drafted on the basis of an interpretation in which the references (3a, 3b) (see page 15, last line) should instead be (3a, 3c), in accordance with the description and the figures.